



# LE-3D

Dual Channel Stereoscopic 3D Legaliser  
29/08/2011 VI.00

## user manual

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# I System Overview

The LE-3D is a full-featured multi-mode legaliser system using the geNETics platform. The main features of the LE-3D series of legalisers are as follows:

- Two Independent HD SDI inputs/outputs for dual stereoscopic 3D legalisation from one set of level control menus.
- Provides Legalisation of the HD SDI Input signal with full 10 bit processing throughout.
- Composite, YUV and RGB colour spaces
- Adjustable Clipping Levels.
- Adjustable soft clipping knee levels. (RGB and YUV).
- Highly effective overshoot and undershoot suppression on the luminance signal.
- Integral luma and chroma gain, black level adjustment & hue rotation.
- EBU 2003 standard legalisation settings.
- 6 User Memories.

## I.1 Legaliser Processing

A Block diagram of the legaliser is shown in Figure 1. Each section is discussed below.

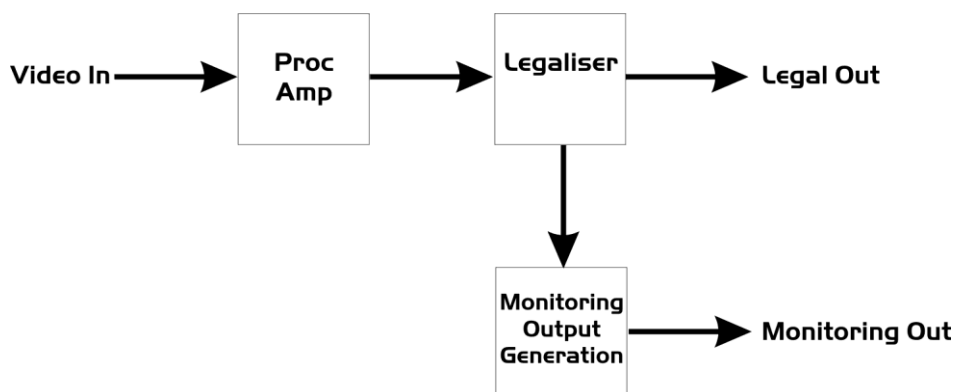


Figure 1 - Basic Legaliser Structure

## I.2 Proc Amp

This enables the luma gain to be adjusted from 0 to 200%, Similarly the chroma also is adjustable from 0 to 200%. Full 10 bit by 10 bit Multipliers are used with a

rounded 10 bit product. Black level adjustment is also applied at this point as is hue adjustment which allows for  $\pm 180^\circ$  of hue rotation. These controls are accessed via the “Picture” menu.

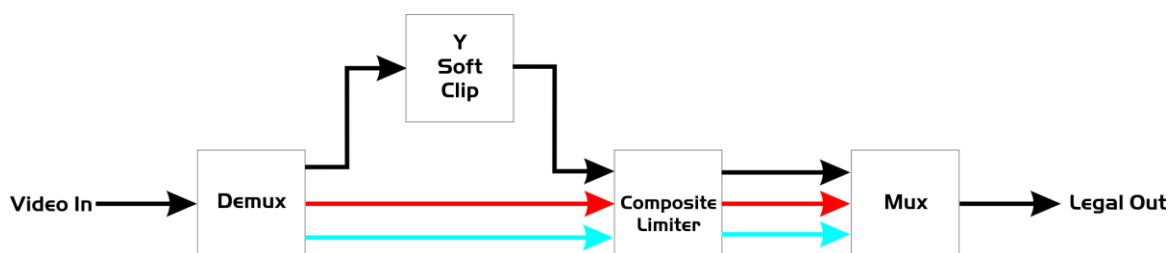
## **I.3 Legaliser**

The legaliser operates in one of three modes; RGB, YUV or Composite. The mode is selected via the top level mode menu. Each mode is discussed below. In all modes the legaliser is transparent to pixels within the legal range.

### **I.3.1 Composite Mode**

The basic form of the composite legaliser is shown in Figure 2. In composite mode the legaliser restricts the Y, U & V components such that when the signal is converted to a composite waveform the Y component stays within the range allowed by the Y High Clip and Y Low Clip and the total composite waveform stays within the range defined by Comp High Clip and Comp Low Clip.

The legaliser works by selectively reducing the saturation of pixels which would otherwise result in over modulation of the composite waveform. Composite mode preserves the hue of each pixel but not the saturation.



**Figure 2 - Composite Legaliser Structure**

### **I.3.2 RGB Mode**

The basic form of the RGB legaliser is shown in Figure 3. In RGB mode the legaliser first converts the video from the YUV colour space to the RGB colour space. The RGB data is then soft clipped according to the settings for RGB High Clip & Knee and RGB Low Clip & Knee. Finally the clipped RGB data is converted back to the YUV colour space. The RGB legal colour space is a subset of the composite legal colour space so an RGB legal signal is also composite legal but the reverse is not true.

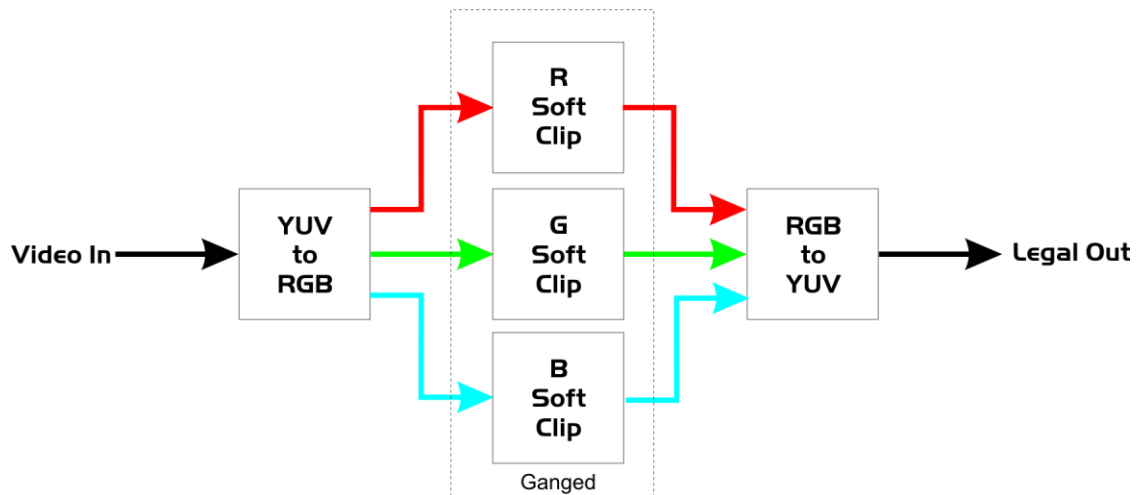


Figure 3 - RGB Legaliser Structure

### I.3.3 YUV Mode

The basic form of the YUV legaliser is shown in Figure 4. In YUV mode the legaliser provides direct clipping of the raw YUV data using separate clip and knee parameters for the Y and colour difference components.

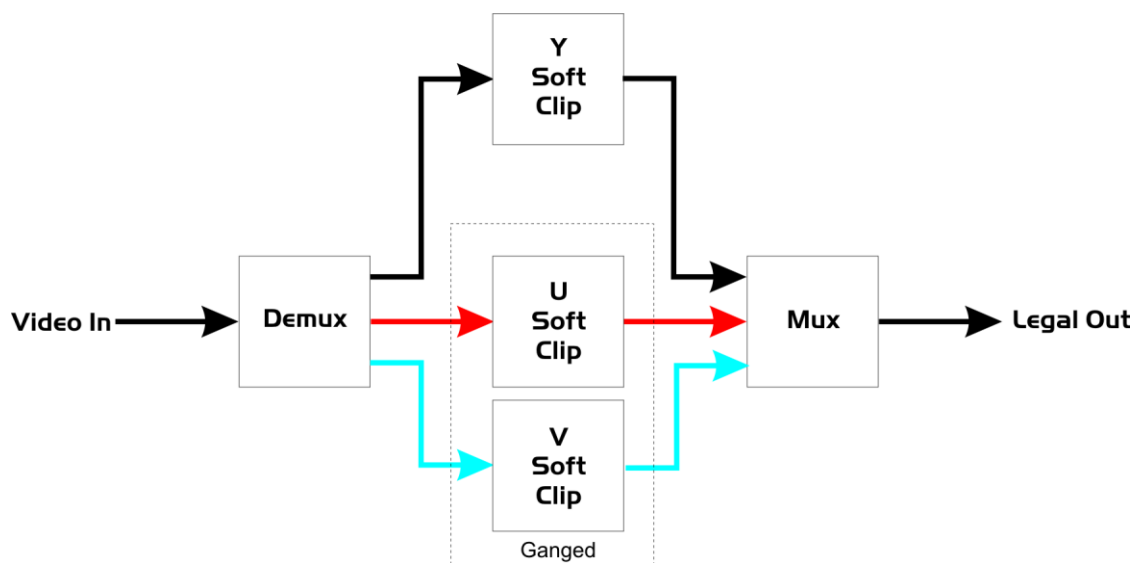


Figure 4 - YUV Legaliser Structure

### I.3.4 Clip & Knee

Many of the legaliser functions present Clip and Knee parameters to the user. The Clip parameters specify the maximum and minimum values the system legaliser will allow to pass. Figure 5 shows an illegal input to the clipper with detail in the illegal highlight and lowlight areas of the signal. When the knee values are set to the same value as their respective Clips the legaliser operates as a hard-clipper as shown in Figure 6. The signal is now legal but the detail in the highlights and lowlights has been lost. Figure 7 shows the same input signal

legalised with a 10% difference between the Clips and their respective Knees. The highlight/lowlight detail has been compressed into the legal region at the expense of some of the dynamic range of the originally legal part of the waveform.



Figure 5 - Illegal Source

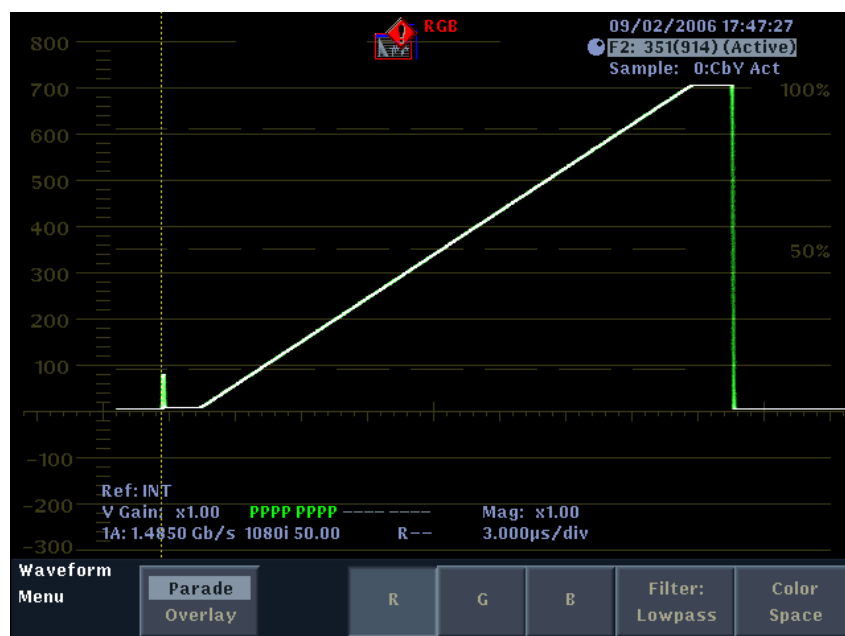


Figure 6 - Hard Clipped Output

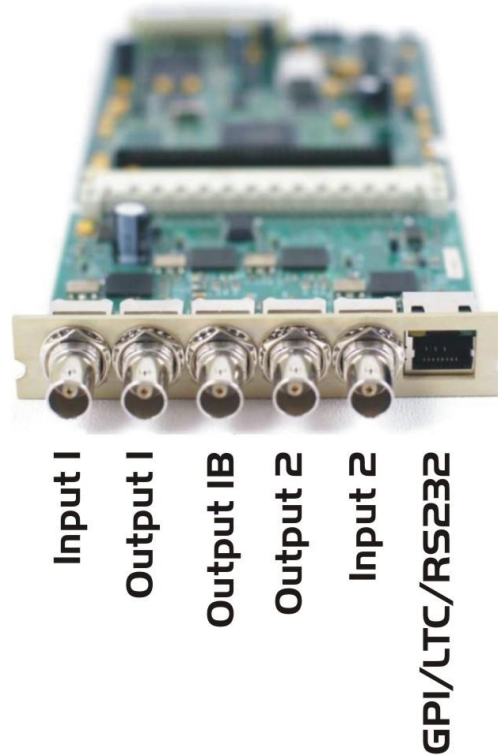




## 2 Installation

### 2.1 Connections to a LE-3D

Figure 8 shows the typical connections to the LE-3D.



**Figure 8 - Typical Connections**

- Note GPI/LTC/RS232 functionality not present in LE-3D

## 3 Control Panel

All GeNETics products are controlled using a generic menu system. This generic menu system is operated from a generic panel (Flexipanel FP-9 or FP-10). An FP-9 is shown below (An FP-10 has the same controls in a different layout style). For information about acquiring processor cards for control on a Flexipanel see the etherbox manual section 4.

### 3.1 General Flexipanel controls

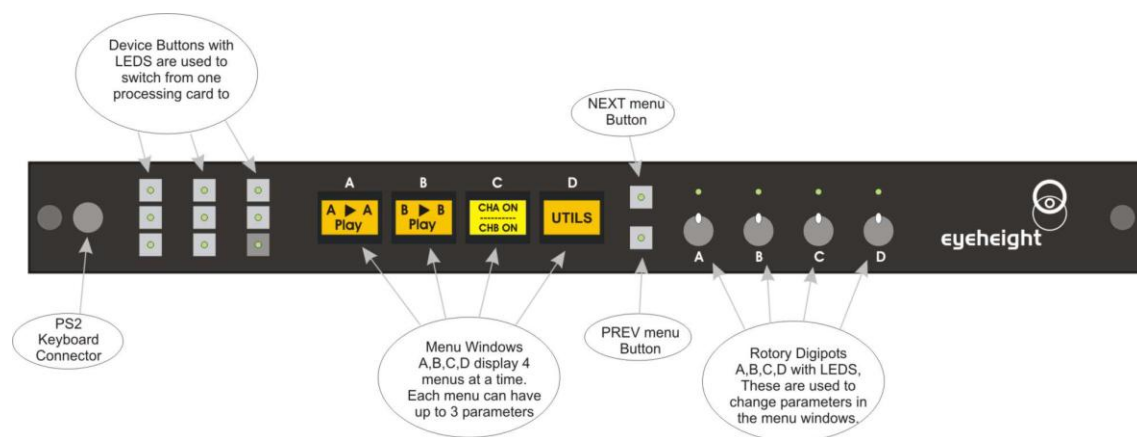


Figure 9: Flexipanel (FP-9) controls.

#### 3.1.1 Device Buttons

There are 8 grey device buttons. These switch between the currently selected processing cards installed in the etherbox. It is also possible to select cards in another chassis if the I-Bus is connected to the other chassis.

#### 3.1.2 Menu Navigation

There are two ways to navigate from menu to menu.

1. Using the NEXT and PREV buttons. These are for “Flat” menu structures. The NEXT and PREV LEDS will flash while further menus are available.
2. Using a **GOTO ANOTHER MENU** LCD button (as below coloured orange). This is more common and will take you straight to a relevant set of menus. Examples are the **Play** and **UTILS** menu’s shown on Figure 8.



**Figure 10: Types of menus showing their characteristic colours**

### **3.1.3 Parameter adjustment of a green menu**

A green menu is one in which there is only one adjustable parameter. There are two ways to adjust the parameter in a green menu.

1. Press the green LCD button. This will increment the value in that window. This is most frequently done when the menu parameter is Textural for example switching a parameter between ON and OFF. In this case a button press is most natural.
2. Use the Rotary digipot (A, B, C or D) to adjust the parameter in the respective LCD window (A, B, C or D). The direction and speed of rotation enable numeric values to be set easily.

### **3.1.4 Parameter adjustment of a red menu**

A red menu is one in which there is two or three adjustable parameters. In this case it is necessary to first select the menu by pressing the red button. When the red button is pressed it will turn green and either two or three of the rotary digipot LEDS will flash indicating that the respective rotary digipot will operate the respective parameter.

### **3.1.5 Information display**

A Yellow menu (Which on most panels does look a light orange!) is one in which only information is displayed. An example of this is the software version display.

## 4 Operation

### 4.1 Manual control of the LE-3D

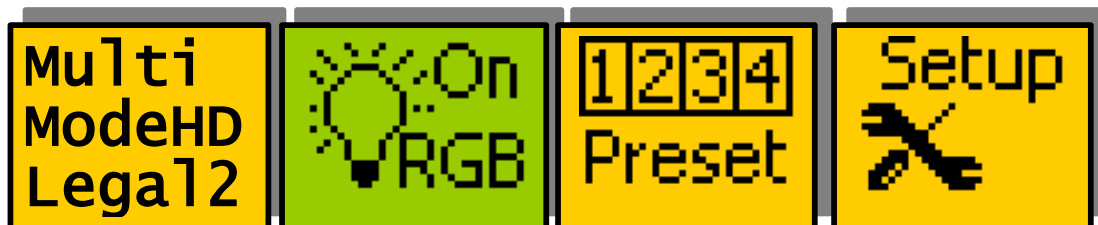
The LE-3D is controlled using a set of MENUS. Each of these menus contains up to 3 parameters that are adjusted using the rotary digipots. The Menus define all of the adjustable operational parameters in the LE-3D.

See chapter 3 Control Panel Operation for details of the control panel operation.

See section 3 of this chapter for the full list of menus.

### 4.2 Operational Menus for the LE-3D

#### Menu 00-03: Top Level Menus



Menu Num.	Heading	Automation	Function
00	Product Name	none	Press this to display the product software version.

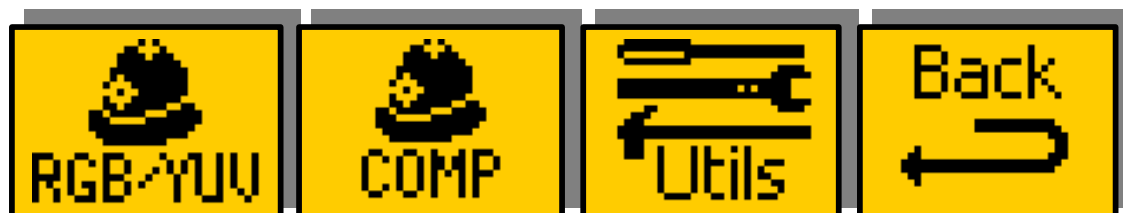
01	MODE	OFF RGB YUV COMP [0→3]	Selects the legaliser modes
02	PRESET	none	Go to the main Preset menus (4-7)
03	SETUP	none	Go to the main Setup menus (8-11)

#### Menu 04-07: Preset Menus



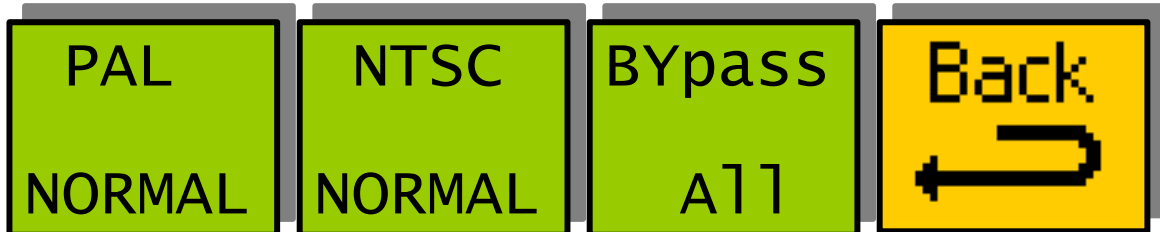
Menu Num.	Heading	Automation	Function
04	STND PRESET	none	Go to the User Preset menus (12-15)
05	USER PRESET	none	Go to the Standard Preset menus (20-23)
06		none	
07	BACK	none	Back to the main operational menus (0-3)

#### Menu 08-11: Setup Menus



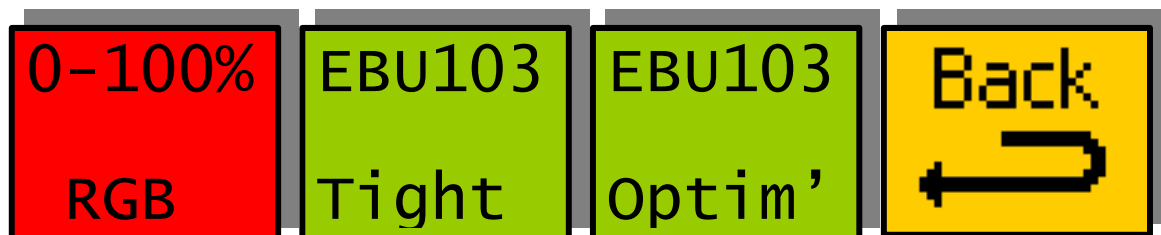
Menu Num.	Heading	Automation	Function
08	RGB/YUV	none	Got to the RGB/YUV main menus (36-39)
09	COMP	none	Go to the main COMP menus (80-83)
10	UTILS	none	Go To the main Utility menus (108-115)
11	BACK	none	Back to the main Operation menus (0-3)

#### Menus 12-15: Presets



Menu Num.	Heading	Automation	Function
12	PAL NORMAL Preset Setting	1=Recall (Variable 1)	Pressing this will Set The system to Composite Clipping: Hi Luma Clip = +700mv Hi Chroma Clip = +931mv Lo Luma Clip = +0mv Lo Chroma Clip = -230  Hi Luma Knee = +700mv Hi Chroma Knee = +931mv Lo Luma Knee = +0mv Lo Chroma Knee = -230
13	NTSC NORMAL Preset Setting	1=Recall (Variable 1)	Pressing this will Set The system to Composite Clipping: Hi Luma Clip = +702mv Hi Chroma Clip = +843mv Lo Luma Clip = +38mv Lo Chroma Clip = -185  Hi Luma Knee = +702mv Hi Chroma Knee = +843mv Lo Luma Knee = +38mv Lo Chroma Knee = -185
14	Bypass All	1=Recall (Variable 1)	Pressing this will Set The Legaliser to OFF
15	BACK	none	Go back to the main Preset menus (4-7)

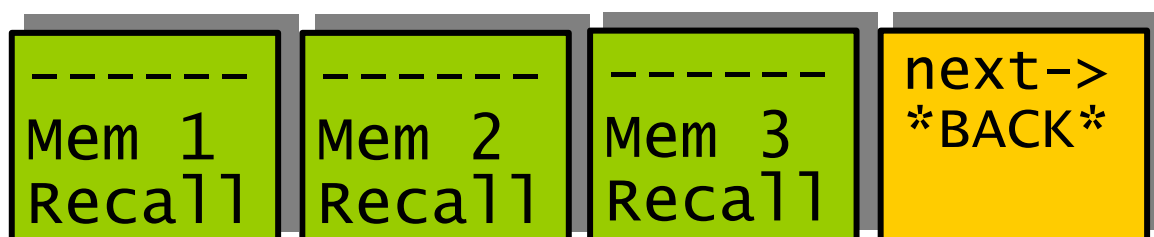
## Menus 16-19: Presets



Menu	Heading	Automation	Function
16	0-100% RGB Preset Setting	1=Recall	Pressing this will Set The system to RGB Clipping: Hi RGB Clip = 100% Lo RGB Clip = 0.0% Hi RGB Knee = 100% Lo RGB Knee = 0.0%
17	EBU 103 Tight Setting	1=Recall (Variable 1)	Pressing this will Set The system to RGB Clipping: Hi RGB Clip = 103% Lo RGB Clip = -1.0% Hi RGB Knee = 103% Lo RGB Knee = -1.0%
18	EBU 103 Optimum Setting	1=Recall (Variable 1)	Pressing this will Set The system to RGB Clipping: Hi RGB Clip = 101% Lo RGB Clip = 0.0% Hi RGB Knee = 101% Lo RGB Knee = 0.0%
19	BACK	none	Go back to the main Preset menus (4-7)

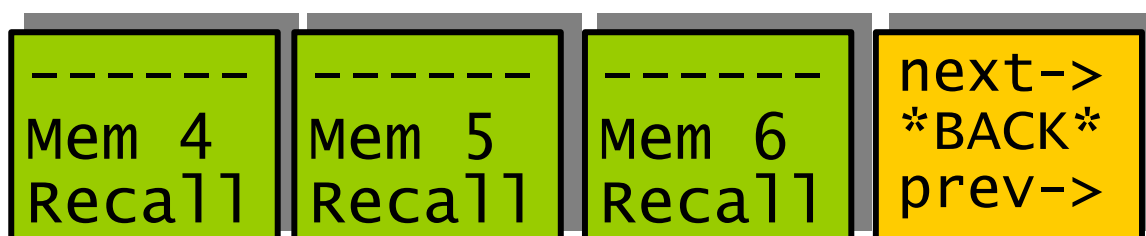


## Menus 20–23: Memory Controls



Menu Num.	Heading	Automation	Function
20	MEM1	1=Recall (Variable 1)	Pressing this will recall Memory number 1. User Names can be programmed in to the memories using a keyboard. See “geNETics User guide”, section “Giving product Memories names”
21	MEM2	1=Recall (Variable 1)	Pressing this will recall Memory number 2.
22	MEM3	1=Recall (Variable 1)	Pressing this will recall Memory number 3.
23	BACK	none	Got to the Main Preset menus (4-7)

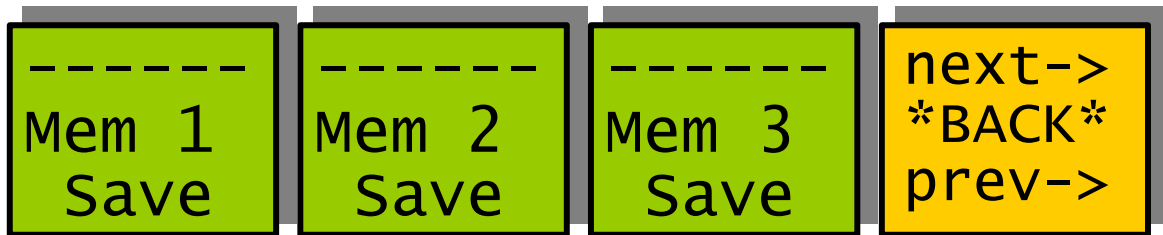
## Menus 24-27: Memory Controls



Menu Num.	Heading	Automation	Function
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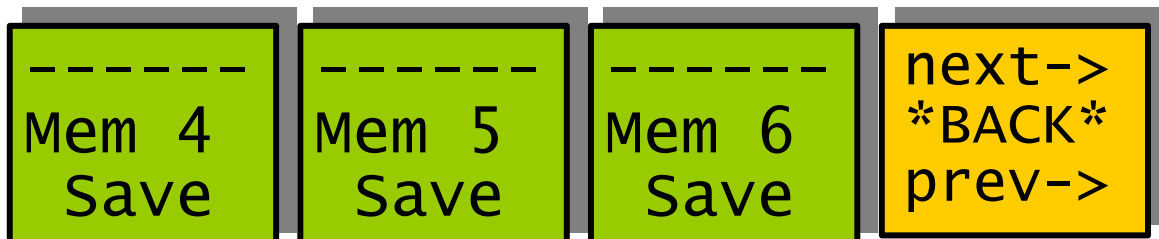
24	MEM4	1=Recall (Variable 1)	Pressing this will recall Memory number 4.
25	MEM5	1=Recall (Variable 1)	Pressing this will recall Memory number 5.
26	MEM6	1=Recall (Variable 1)	Pressing this will recall Memory number 6.
27	BACK	none	Go to the main Preset menus (4-7)

#### Menu 28-31: Memory Controls



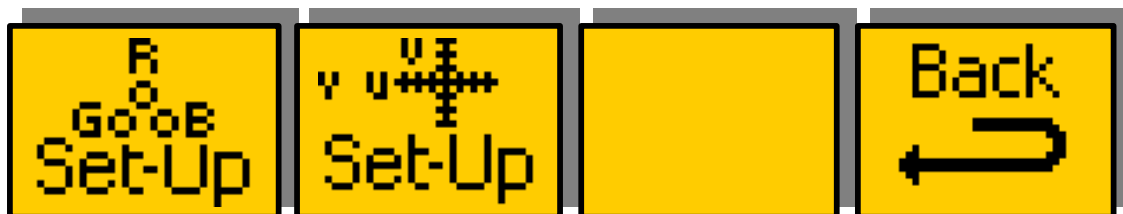
Menu Num.	Heading	Automation	Function
28	Save Mem. #1	1= Save	Pressing this will Save Memory number 1.
29	Save Mem. #	1= Save	Pressing this will Save Memory number 2.
30	Save Mem. #3	1= Save	Pressing this will Save Memory number 3.
31	BACK	none	Go to the main Preset menus (4-7)

## Menu 32-35: Memory Controls



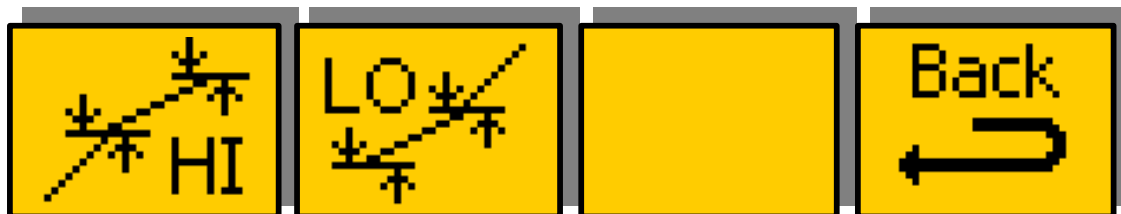
Menu Num.	Heading	Automation	Function
32	Save Mem. #5	1= Save	Pressing this will Save Memory number 4.
33	Save Mem. #6	1= Save	Pressing this will Save Memory number 5.
34	Save Mem. #7	1= Save	Pressing this will Save Memory number 6.
35	BACK	none	Go to the main Preset menus (4-7)

## Menu 36-39: RGB/YUV Setup Menus



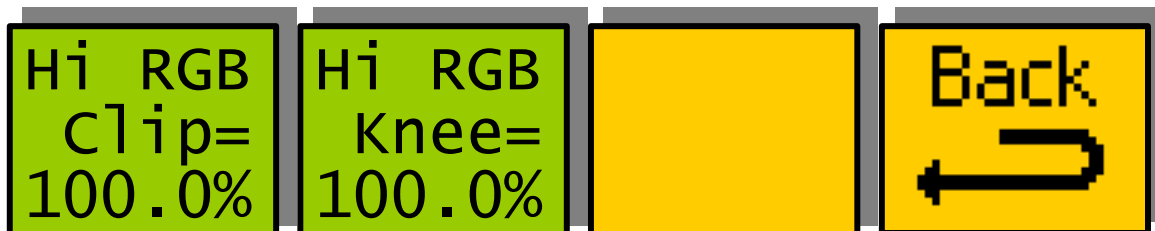
Menu Num.	Heading	Automation	Function
36	RGB Setup	none	Go to the RGB Setup menus (40-43)
37	YUV Setup	none	Go to the YUV Setup menus (52-55)
38	Blank	none	
39	BACK	none	Go to the Setup menus (6-8)

## Menu 40-43: RGB Clip and Knee Menus



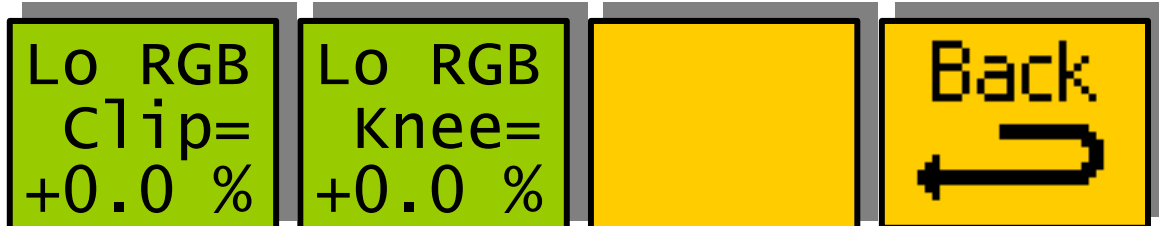
Menu Num.	Heading	Automation	Function
40	Hi	none	Go to the RGB Hi Clip and Hi Knee Clipping menus (44-47)
41	Lo	none	Go to the RGB Lo Clip and Lo Knee Clipping menus (48-51)
42		none	Blank
43	BACK	none	Go to the RGB/YUV menus (36-39)

## Menus 44-47: RGB High Clip and Knee settings



Menu Num.	Heading	Automation	Function
44	High Clip Level	51% → 109% [512→1023]	This indicates the High Clip point for the RGB Clipping. This is normally set to 100% for clipping at 0.7V in the analogue domain.
45	High Knee Level	51% → 109% [512→1023]	This indicates the High Knee point for the RGB Clipping. This can be set to give a “soft clip” from this knee point to the hard clip point.
46		none	Blank
47	BACK	none	Go to the RGB Clip and Knee menus (40-43)

### Menu 48-51: RGB Low Clip and Knee Settings



Menu Num.	Heading	Automation	Function
48	Low Clip Level	-7%→ 50% [1→511]	This indicates the Low Clip point for the RGB Clipping. This is normally set to 0% for clipping at 0V in the analogue domain.
49	Low Knee Level	-7%→ 50% [1→511]	This indicates the Low Knee point for the RGB Clipping. This can be set to give a “soft clip” from this knee point to the Low clip point.
50		none	Blank
51	BACK	none	Go to the RGB Clip and Knee menus (40-43)

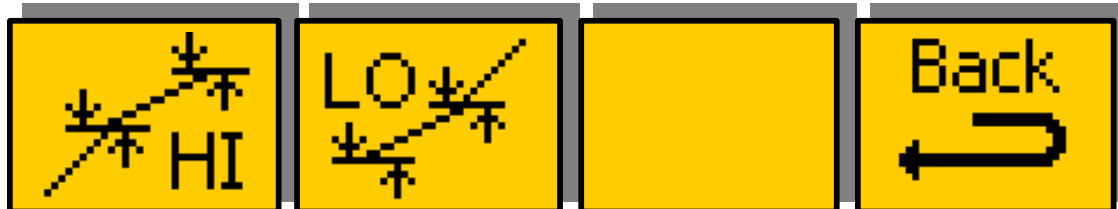
### Menu 52-55: YUV Clips



Menu Num.	Heading	Automation	Function
52	Y Clips	none	Go to the Y Clip and Knee menus (56-59)
53	UV Clips	none	Go to the UV Clip and Knee menus (68-71)
54		none	Blank

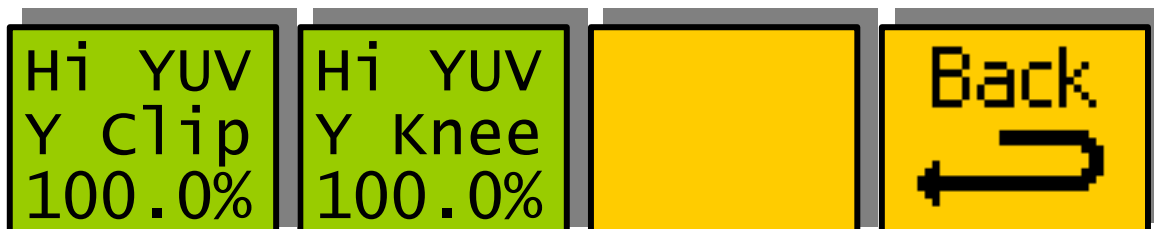
55	BACK	none	Go to the RGB/YUV menus (36-39)
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### Menu 56-59: YUV Y Clip and Knee Menus



Menu Num.	Heading	Automation	Function
56	Hi	none	Go to the YUV Y Hi Clip and Hi Knee Clipping menus (60-63)
57	Lo	none	Go to the YUV Y Lo Clip and Lo Knee Clipping menus (64-67)
58		none	Blank
59	BACK	none	Go to the YUV menus (52-55)

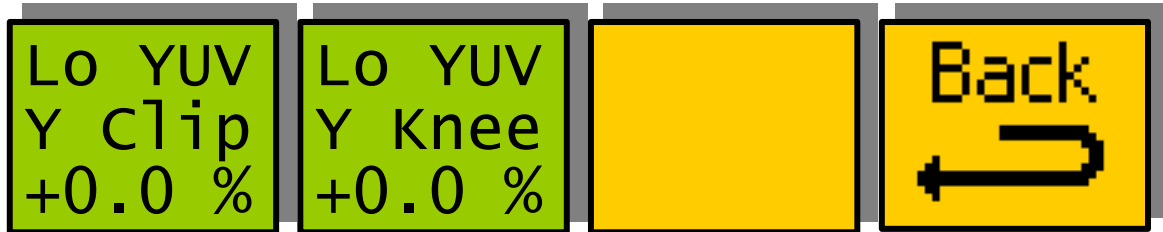
### Menus 60-63: YUV Y High Clip and Knee settings



Menu Num.	Heading	Automation	Function
60	High Clip Level	51% → 109% [512→1023]	This indicates the High Clip point for the YUV Y Clipping. This is normally set to 100% for clipping at 0.7V in the analogue domain.
61	High Knee Level	51% → 109% [512→1023]	This indicates the High Knee point for the YUV Y Clipping. This can be set to give a “soft clip” from this knee point to the hard clip point.
62		none	Blank

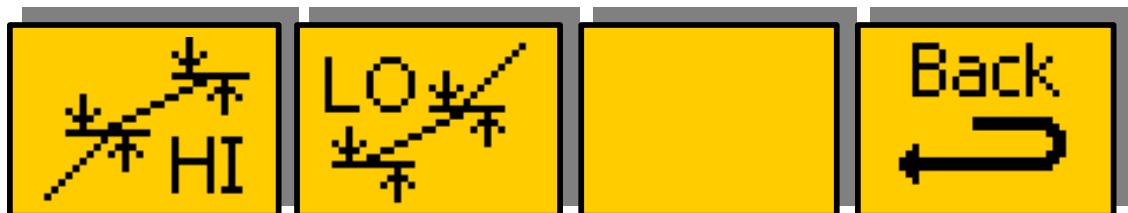
63	BACK	none	Go to the YUV Y Clip and Knee menus (56-59)
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#### Menu 64-67: YUV Y Low Clip and Knee Settings



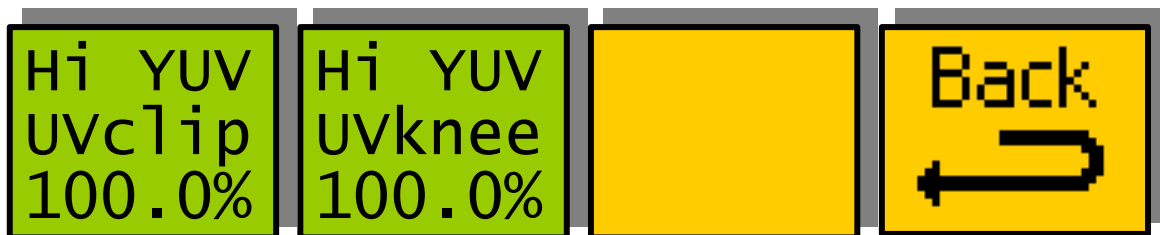
Menu Num.	Heading	Automation	Function
64	Low Clip Level	-7%→ 50% [1→511]	This indicates the Low Clip point for the YUV Y Clipping. This is normally set to 0% for clipping at 0V in the analogue domain.
65	Low Knee Level	-7%→ 50% [1→511]	This indicates the Low Knee point for the YUV Y Clipping. This can be set to give a “soft clip” from this knee point to the Low clip point.
66		none	Blank
67	BACK	none	Go to the YUV Y Clip and Knee menus (56-59)

#### Menu 68-71: YUV UV Clip and Knee Menus



Menu Num.	Heading	Automation	Function
68	Hi	none	Go to the YUV UV Hi Clip and Hi Knee Clipping menus (72-75)
69	Lo	none	Go to the YUV UV Lo Clip and Lo Knee Clipping menus (76-79)
70		none	Blank
71	BACK	none	Go to the YUV menus (52-55)

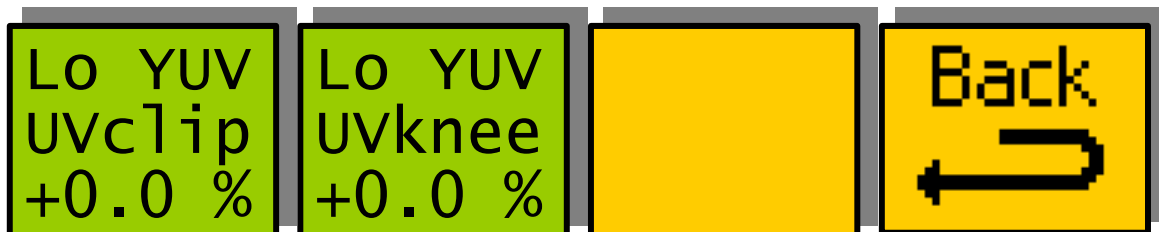
### Menus 72-75: YUV UV High Clip and Knee settings



Menu Num.	Heading	Automation	Function
72	High Clip Level	51% → 109% [512→1023]	This indicates the High Clip point for the YUV UV Clipping. This is normally set to 100% for clipping at 0.7V in the analogue domain.
73	High Knee Level	51% → 109% [512→1023]	This indicates the High Knee point for the YUV UV Clipping. This can be set to give a “soft clip” from this knee point to the hard clip point.
74		none	Blank
75	BACK	none	Go to the RGB Clip and Knee menus (68-71)

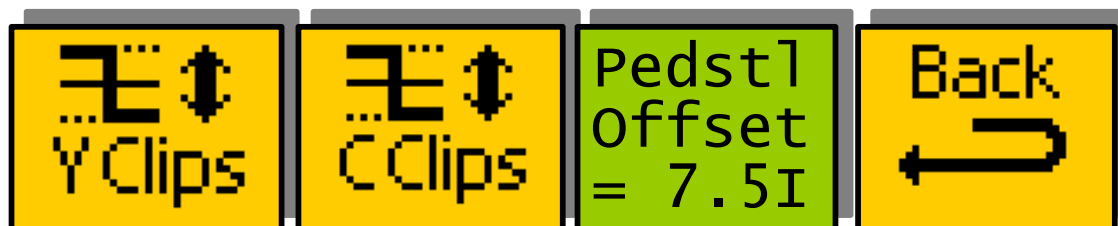


## Menu 76-79: YUV UV Low Clip and Knee Settings



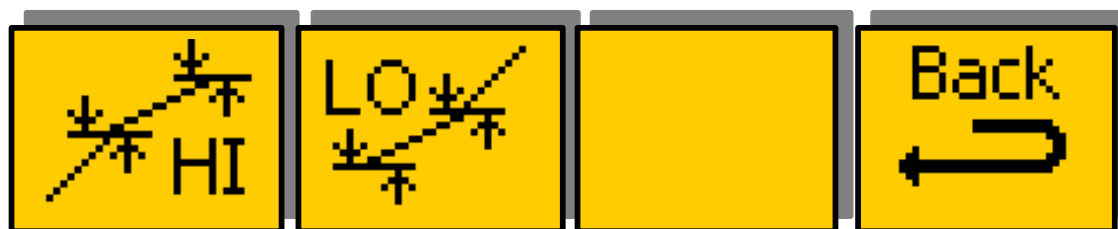
Menu Num.	Heading	Automation	Function
76	Low Clip Level	-7%→ 50% [1→511]	This indicates the Low Clip point for the YUV UV Clipping. This is normally set to 0% for clipping at 0V in the analogue domain.
77	Low Knee Level	-7%→ 50% [1→511]	This indicates the Low Knee point for the YUV UV Clipping. This can be set to give a “soft clip” from this knee point to the Low clip point.
78		none	Blank
79	BACK	none	Go to the YUV UV Clip and Knee menus (68-71)

## Menu 80-83: Composite Clip and Knee Menus (NTSC)



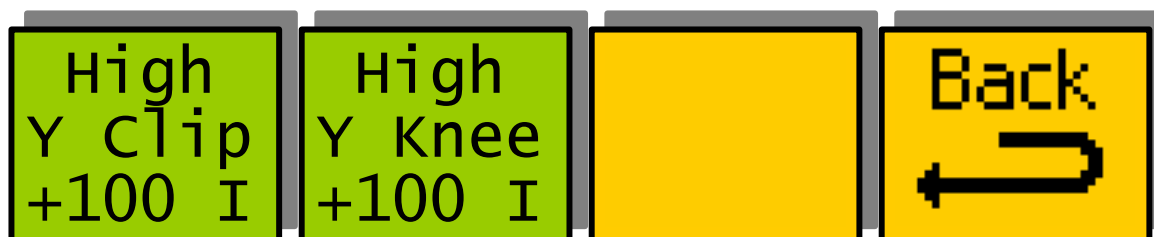
Menu Num.	Heading	Automation	Function
80	Y Clips	none	Go to the Composite Luma Hi/Lo Clip and Hi/Lo Knee Clipping menus (84-87)
81	C Clips	none	Go to the Composite Chroma Hi/Lo Clip and Hi/Lo Knee Clipping menus (96-99)
82	Pedestal	0.0I 7.5I [0:1]	Pedestal IRE setting. This can be set to 0.0 or 7.5 IRE.
83	BACK	none	Go to the Setup menus (8-11)

#### Menu 84-85: Composite Luma Clip and Knee Menus (NTSC)



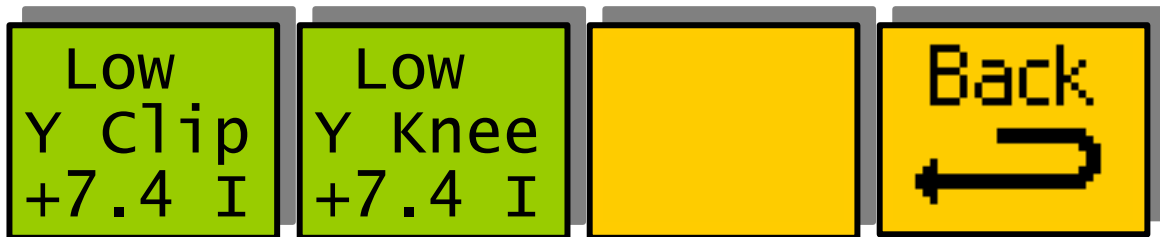
Menu Num.	Heading	Automation	Function
84	Hi	none	Go to the Composite Luma Hi Clip and Hi Knee Clipping menus (88-91)
85	Lo	none	Go to the Composite Luma Lo Clip and Lo Knee Clipping menus (92-95)
86	Blank		
87	BACK	none	Go to the Setup menus (80-83)

#### Menus 88-91: Composite Luma High Clip and Knee settings (NTSC)



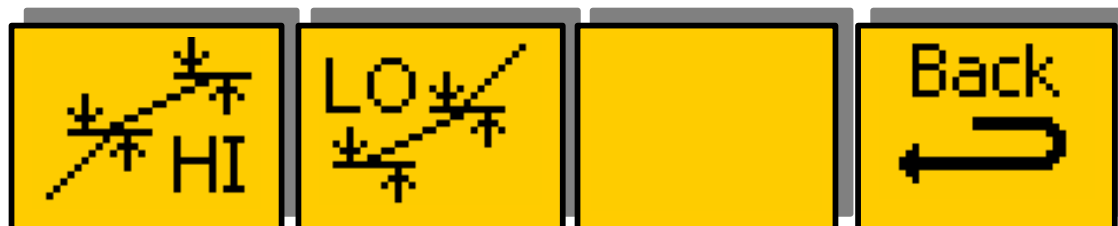
Menu Num.	Heading	Automation	Function
88	High Clip Level	[8-511]	This indicates the High Clip point for the Composite Luma Clipping.
89	High Knee Level	[8-511]	This indicates the High Knee point for the Composite Luma Clipping. This can be set to give a “soft clip” from this knee point to the hard clip point.
90	Blank		
91	BACK	none	Go to the Composite Clip and Knee menus (84-87)

#### Menu 92-95: Composite Luma Low Clip and Knee Settings (NTSC)



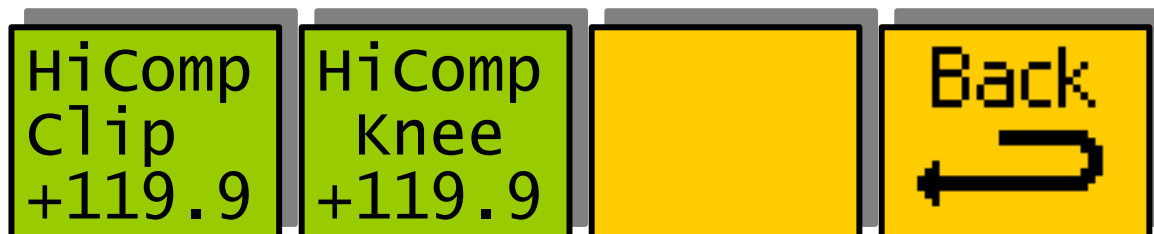
Menu Num.	Heading	Automation	Function
92	Low Clip Level	[8→511]	This indicates the Low Clip point for the Composite Luma Clipping.
93	Low Knee Level	[8→511]	This indicates the Low Knee point for the Composite Luma Clipping. This can be set to give a “soft clip” from this knee point to the hard clip point.
94	Blank		
95	BACK	none	Go to the Composite Clip and Knee menus (84-87)

### Menu 96-99: Composite Chroma Clip and Knee Menus (NTSC)



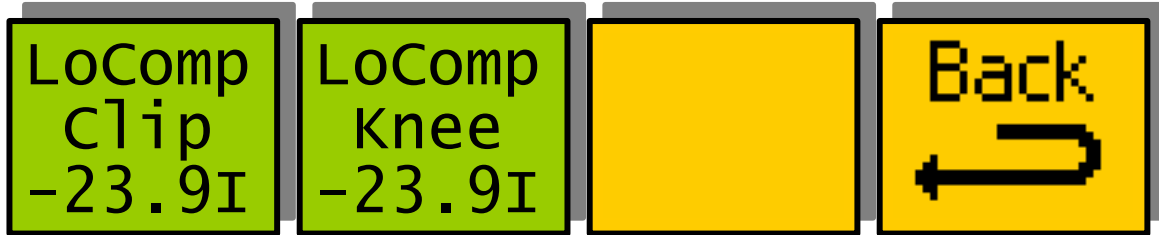
Menu Num.	Heading	Automation	Function
96	Hi	none	Go to the Composite Chroma Hi Clip and Hi Knee Clipping menus (100-103)
97	Lo	none	Go to the Composite Luma Lo Clip and Lo Knee Clipping menus (104-107)
98	Blank		
99	BACK	none	Go to the Setup menus (80-83)

### Menus 100-103: Composite Chroma High Clip and Knee settings (NTSC)



Menu Num.	Heading	Automation	Function
100	High Clip Level	[8-511]	This indicates the High Clip point for the Composite Chroma Clipping.
101	High Knee Level	[8-511]	This indicates the High Knee point for the Composite Chroma Clipping. This can be set to give a “soft clip” from this knee point to the hard clip point.
102	Blank		
103	BACK	none	Go to the Composite Clip and Knee menus (96-99)

### Menu 104-107: Composite Chroma Low Clip and Knee Settings (NTSC)



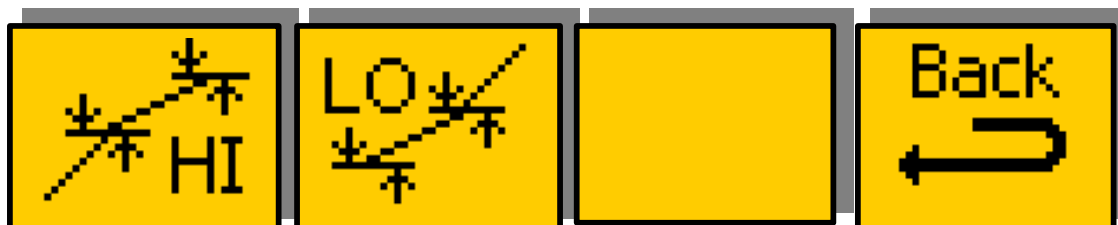
Menu Num.	Heading	Automation	Function
104	Low Clip Level	[8→511]	This indicates the Low Clip point for the Composite Chroma Clipping.
105	Low Knee Level	[8→511]	This indicates the Low Knee point for the Composite Chroma Clipping. This can be set to give a “soft clip” from this knee point to the hard clip point.
106	Blank		
107	BACK	none	Go to the Composite Clip and Knee menus (96-99)

### Menu 80-83: Composite Clip and Knee Menus (PAL)



Menu Num.	Heading	Automation	Function
80	Y Clips	none	Go to the Composite Chroma Hi/Lo Clip and Hi/Lo Knee Clipping menus (84-87)
81	C Clips	none	Go to the Composite Chroma Hi/Lo Clip and Hi/Lo Knee Clipping menus (96-99)
82	Blank		
83	BACK	none	Go to the Setup menus (8-11)

### Menu 84-87: Composite Luma Clip and Knee Menus (PAL)



Menu Num.	Heading	Automation	Function
84	Hi	none	Go to the Composite Luma Hi Clip and Hi Knee Clipping menus (88-91)
85	Lo	none	Go to the Composite Luma Lo Clip and Lo Knee Clipping menus (92-95)
86		none	Blank
87	BACK	none	Go to the Setup menus (80-83)

### Menus 88-91: Composite Luma High Clip and Knee settings (PAL)



Menu Num.	Heading	Automation	Function
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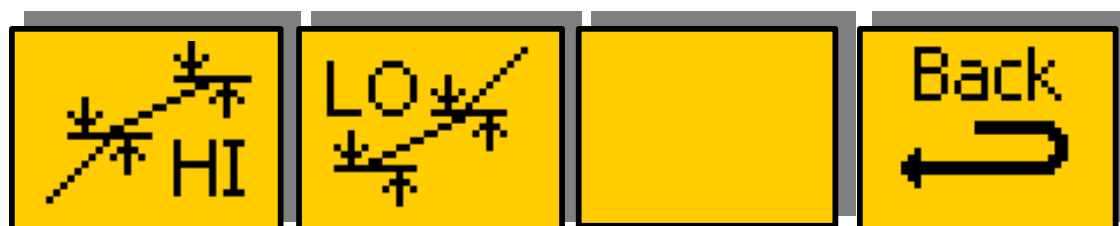
88	High Clip Level	[8-511]	This indicates the High Clip point for the Composite Luma Clipping.
89	High Knee Level	[8-511]	This indicates the High Knee point for the Composite Luma Clipping. This can be set to give a “soft clip” from this knee point to the hard clip point.
90	Blank		
91	BACK	none	Go to the Composite Clip and Knee menus (84-87)

### Menu 92-95: Composite Luma Low Clip and Knee Settings (PAL)



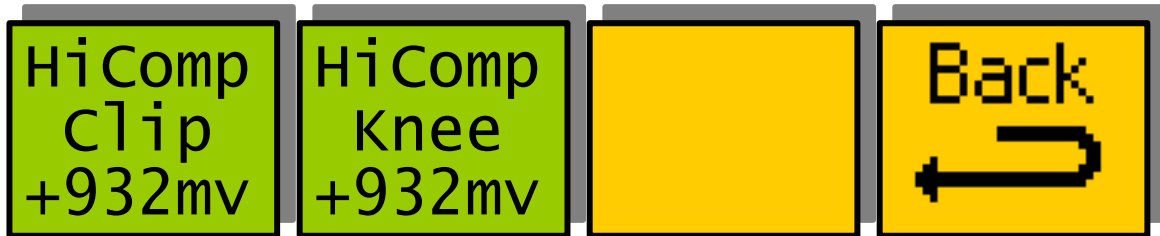
Menu Num.	Heading	Automation	Function
92	Low Clip Level	[8→511]	This indicates the Low Clip point for the Composite Luma Clipping.
93	Low Knee Level	[8→511]	This indicates the Low Knee point for the Composite Luma Clipping. This can be set to give a “soft clip” from this knee point to the Low clip point.
94	Blank		
95	BACK	none	Go to the Composite Clip and Knee menus (80-83)

### Menu 96-99: Composite Chroma Clip and Knee Menus (PAL)



Menu Num.	Heading	Automation	Function
96	Hi	none	Go to the Composite Chroma Hi Clip and Hi Knee Clipping menus (100-103)
97	Lo	none	Go to the Composite Chroma Lo Clip and Lo Knee Clipping menus (104-107)
98		none	Blank
99	BACK	none	Go to the Setup menus (80-83)

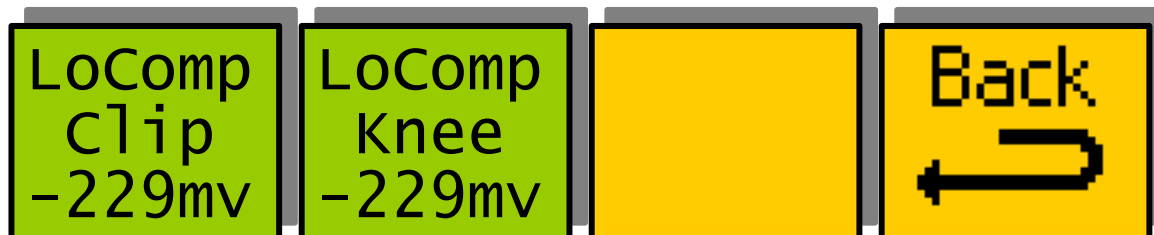
### Menus 100-103: Composite Chroma High Clip and Knee settings (PAL)



Menu Num.	Heading	Automation	Function
100	High Clip Level	[8-511]	This indicates the High Clip point for the Composite Chroma Clipping.
101	High Knee Level	[8-511]	This indicates the High Knee point for the Composite Chroma Clipping. This can be set to give a “soft clip” from this knee point to the hard clip point.
102	Blank		
103	BACK	none	Go to the Composite Clip and Knee menus (96-99)

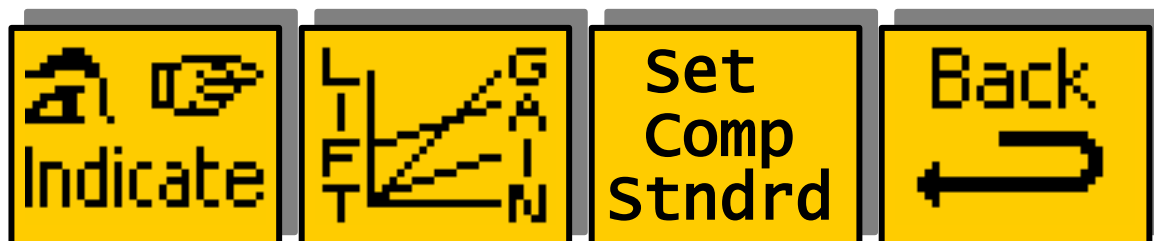


### Menu 104-107: Composite Chroma Low Clip and Knee Settings (PAL)



Menu Num.	Heading	Automation	Function
104	Low Clip Level	[8→511]	This indicates the Low Clip point for the Composite Luma Clipping.
105	Low Knee Level	[8→511]	This indicates the Low Knee point for the Composite Luma Clipping. This can be set to give a “soft clip” from this knee point to the Low clip point.
106	Blank		
107	BACK	none	Go to the Composite Clip and Knee menus (96-99)

### Menu 108-111: UTILITY MENUS - 1



Menu Num.	Heading	Automation	Function
108	LIFT/GAIN	none	Go to the Lift/Gain menus (80-83)
109	INDICATE	none	Go to the Composite Clip and Knee menus (132-135)
110	SET COMP STNDRD	none	Go to the Composite Standard menus (128-131)
111	BACK	none	Go to the Setup menus (8-11)

## Menu 112-115: UTILITY MENUS - 2



Menu Num.	Heading	Automation	Function
112	LOG	none	Go to the Log menu (128-131)
113	POM	none	Go to the Power on Memory and Reset (144-147)
114	TIME CODES	none	Go to the Time Code Menus (116-119)
115	BACK	none	Go to the Setup menus (8-11)

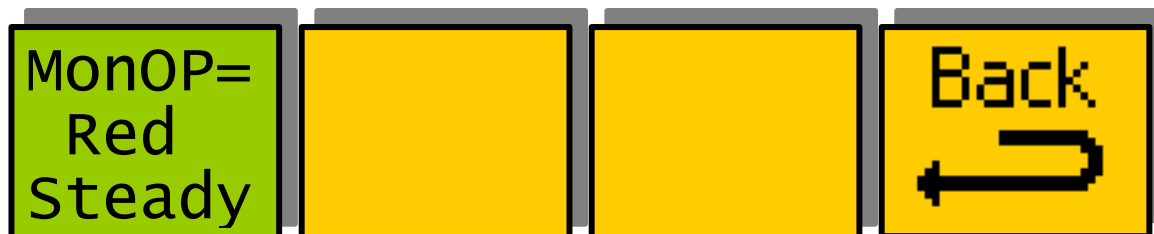
## Menu 116-119: TIME CODE MENUS



Menu Num.	Heading	Automation	Function
116	ATC Mode	LTC VITC1 VITC2 [0→2]	This selects the time code packet type for ATC time codes.
117	Time Code	ATC LTC AUTO [0→2]	This selects ATC or LTC time codes. In AUTO mode the type of time code is selected automatically based on the time code received.
118	Blank		
119	BACK	none	Go to the Composite Clip and Knee

			menus (112-115)
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### Menus 120-123: Out of Gamut Colour



Menu Num.	Heading	Automation	Function
120	MonOP	RedSteady GreenSteady BlueSteady WhiteSteady RedFlash GreenFlash BlueFlash WhiteFlash RawOut LegalOut [0→9]	This is the colour used to indicate the areas of the picture currently being processed by the legaliser.
121	Blank	none	
122	Blank	none	
123	BACK	none	Go to the Utility - 1 menus (108-111)

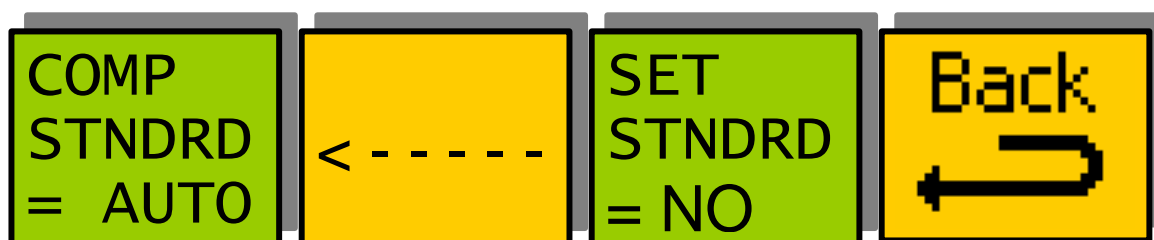
### Menus 124-127: Log mode menus



Menu Num.	Heading	Automation	Function
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124	Log Mode	Off On [0→1]	This will switch on and off the Error Logging output on the RS232 port. This output can be used in conjunction with the Eyeheight TimeCode software to display the errors and timecodes so that problem sections can easily be located
125	Log Threshold	[0→1023]	Specifies the absolute magnitude of allowable over/undershoot before the pixel is logged as severe in the PC logging application.
126		none	Blank
127	BACK	none	Go To the Utils menus (112-115)

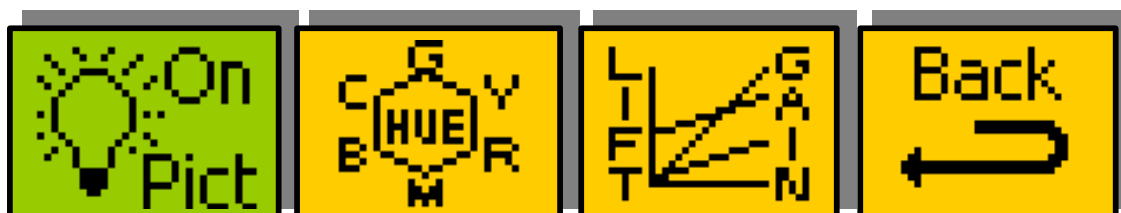
#### Menus 128-131: COMPOSITE STANDARD MENUS



Menu Num.	Heading	Automation	Function
128	COMPOSITE STANDARD	PAL NTSC AUTO [0→2]	This SELECTS the mode for all the menu settings. Selecting “YES” in the SET STANDARD menu will SET the selected mode. In AUTO mode the selected settings are: 1080 @ 24Hz = Stays in last mode 1080 @ 30Hz = NTSC 1080 @ 25Hz = PAL 720p @ 60Hz = NTSC 720p @ 50Hz = PAL 720p @ 30Hz = NTSC

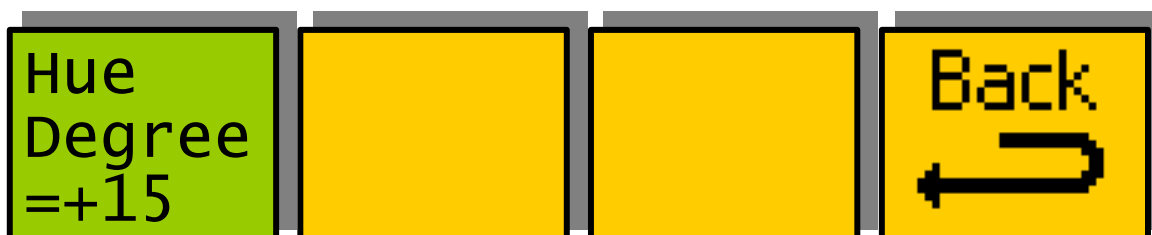
			720p @ 25Hz = PAL 720p @ 24Hz = Stays in last mode
129		none	Blank
130	SET STANDARD	NO YES [0→1]	Selecting “YES” will set all menus to the mode selected in the COMPOSITE STANDARD menu.
131	BACK	none	Go To the Utils menus (108-111)

### Menu 132-135): LIFT/GAIN MENUS



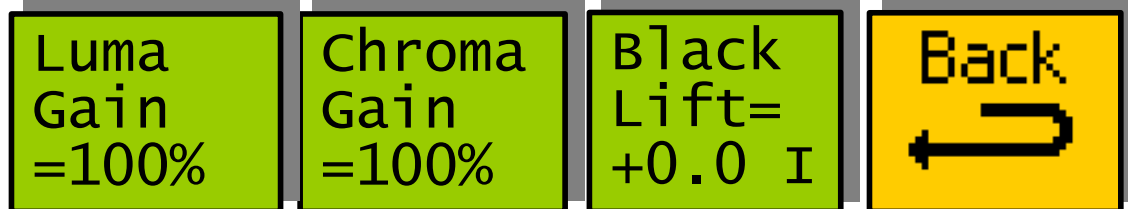
Menu Num.	Heading	Automation	Function
132	Lift, Gain, Hue and Black Control	On Off [0→1]	Active=Proc amp is processing, gain, hue and black controls are active Bypass= Unity Gain and no black offset.
133	HUE	none	Go To the Hue menus (136-139)
134	LIFT/GAIN	none	Go To the Luma, Chroma and Black menus (140-143)
135	BACK	none	Go to the Utility Menus - 1 (108-111)

### Menus 136-139: Hue Control



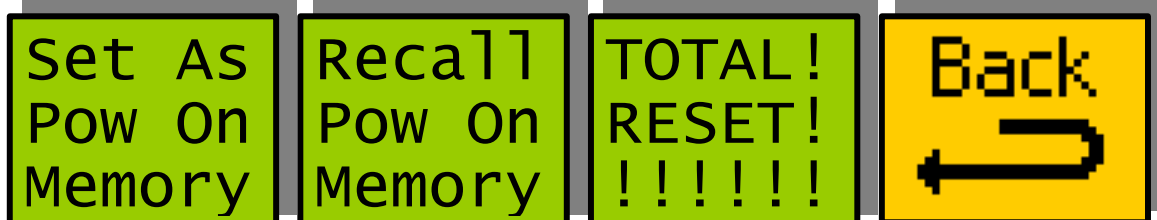
Menu Num.	Heading	Automation	Function
136	Hue	-180 to +180 degrees [-511 → +512]	Hue Rotation value, in degrees.
137		none	Blank
138		none	Blank
139	BACK	none	Go to the Lift/Gain menus (132-135)

#### Menus 140-143: Processing amplifier status.



Menu Num.	Heading	Automation	Function
140	Luma Gain	0→200% [0→511]	Luminance Gain Adjustment
141	Chroma Gain	0→200% [0→511]	Chrominance Gain Adjustment
142	Black Level	+/- 20% Range [-255→255]	Black level adjustment
143	BACK	none	Go to the Lift/Gain menus (132-135)

#### Menu 144-147: Power-on & Reset Controls



Menu Num.	Heading	Automation	Function
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144	Set As Pow On Memory	1=save	Pressing this will save the current set up as the power on default.
145	Recall Pow On Memory	1=Recall	Pressing this will recall the power on default settings.
146	TOTAL RESET	1=Reset	Pressing this will reset the system.
147	BACK	none	Go to the Utility Menus - 2 (112-115)